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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/717,567	11/21/2000	Paul A. Kohl	BFGBP0217US	2128
28862	7590	03/28/2005	EXAMINER	
HUDAK, SHUNK & FARINE, CO., L.P.A. 2020 FRONT STREET SUITE 307 CUYAHOGA FALLS, OH 44221			MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/717,567

Applicant(s)

KOHL, PAUL

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 59-73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 59-73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Interview Summary.

DETAILED ACTION

1. This office action is in response to the after final amendment filed March 14, 2005.

Response to Amendment

2. As indicated in applicant's amendment filed March 14, 2005, during an interview between Examiner Mitchell and applicant's, pending claim 59 was distinguished over the cited art; the finality of that last action is withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 59 –63 are rejected under 35 U.S.C. 102(b) as being anticipated by Machida (JP63098134).
5. Yamada (Fig 2) discloses (cl. 59, 61) a semiconductor device comprising: a substrate (4,5); a patterned layer (6) includes a plurality of regions (i.e. left and to the right of gap) of conductive material disposed on the substrate and having a region thereof bordered by air gaps; and an overcoat layer (8) overlying the patterned layer of conductive material and the air gap, the overcoat layer having a portion thereof overlying the conductive material in the region bordered by the air gaps, and said portion extending below the height of the adjacent air gaps; (cl. 60) and the conductive material forms leads/wiring of a semiconductor device (English Title); and the overcoat

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is a non-conducting material (English Abstract); (cl. 63) and a surface (i.e. portion defining gap) of the conductive material adjacent air gap is covered by a film of non-conducting material.

6. With respect to claims 72 and 73, although Avanzino has the same structure as that claimed, Avanzino does not appear to explicitly disclose the process limitation "such as" the conductive layers being patterned and the semiconductor device formed by removing a sacrificial material from a pre-cursor made in accordance with a "method comprising the steps of: (A) forming a patterned layer of the sacrificial material on a substrate corresponding to a pattern of air gaps to be formed in the semiconductor structure..." "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

7. Claim 68-70 are rejected under 35 U.S.C. 102(b) as being anticipated by Avanzino (U.S 5,776,834).

8. Avanzino (Fig 16) discloses a semiconductor device comprising: a substrate (11,15); a patterned layer (12) of conductive material disposed on the substrate and having a region thereof bordered by air gaps (i.e. not labeled); and an overcoat layer (20) overlying the patterned layer of conductive material and the air gap, the overcoat layer having a portion thereof overlying the conductive material in the region bordered

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by the air gaps; and wherein a surface of the conductive material adjacent a respective air gap is covered by a discrete film (26) of [also cl. 69, 70] silicon dioxide, non-conducting material (Col. 7, Lines 6-7) that does not extend over the conductive material beyond (i.e. height) the air gap that controls corrosion of the surface of the conductive material covered by the film. Wherein the film controls corrosion.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (63-098134)

11. Machida discloses a thickness of the film (i.e. three dimensional), but does not appear to explicitly disclose that the non-conducting material has a thickness of about 100 Å.

12. However, it would have been obvious to form the film at the claimed thickness, since it has been held that mere dimensional limitations are *prima facie* obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA, 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir.

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1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

13. Claims 64 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machida (63-098134) as applied to claim 63 and further in combination with Avanzino (U.S 5,776,834).

14. Machida does not expressly disclose that its overcoat, insulating material is silicon dioxide.

15. Avanzino teaches a silicon dioxide insulating material (20; Abstract).

16. It would have been obvious to one of ordinary skill in the art to form the overcoat from silicon dioxide in order to provide an insulating material as required by Machida (English Abstract).

17. Claims 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avanzino (U.S. 5,776,834).

18. Avanzino discloses a thickness of the film, but does not appear to explicitly disclose that the non-conducting material has a thickness of about 100 Å. See paragraph 12 of this office action.

Allowable Subject Matter

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19. Claim 67 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious forming the gap below the wiring layer, including all the limitations of the independent claim.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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Jmm

March 17, 2005


ERIK KIELIN
PRIMARY EXAMINER